U.PORTO
FEP FACULDADE DE ECONOMIA
UNIVERSIDADE DO PORTO

Impact of Troika's intervention on Capital Structure of Irish, Greek and Portuguese Companies

Joana Sofia Sousa Teixeira
joanastx@gmail.com

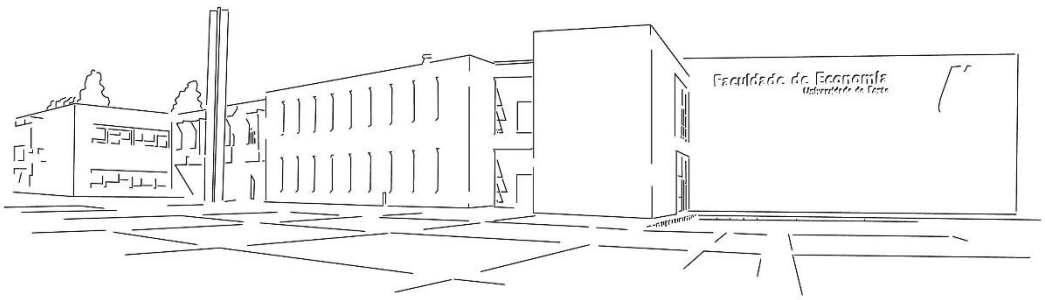
Dissertation

MSc in Finance

Supervisor:

Prof. Paulo Jorge Marques de Oliveira Ribeiro Pereira

2014/2015



Biographical note

Joana Sofia Sousa Teixeira was born on June 5, 1989 in Matosinhos, Porto.

In 2007, Joana joined the *School of Economics and Management*, of the University of Porto (FEP), later completing a Degree in *Business Administration* in 2010 and re-enrolling in *Master in Finance* degree in mid-2012.

Joana has been working in *Rangel Group* since 2010, a multinational freight forwarding company, starting from an internship program, Joana changed to a role within accounts receivable collections team and moved later on to the international affairs department, as financial and administrative support.

Acknowledgements

This dissertation is the culmination of an important stage of my life and there are many people that I am grateful for being by my side.

First of all, I have to thank God and my closest family. My mother – the most loyal friend I would ever had, for being always by my side and all patience she had; my sister for being the best person I ever met; and my father – in posthumous tribute, that even absence his presence was constant through the love and example he left us. They are my pillars of strength and without their support nothing of this would be possible.

I would like to express my deepest appreciation to my supervisor Prof. Dr. Paulo Jorge Pereira for all guidance and tutorship which contributed significantly to this dissertation, as well as Prof. Dra. Natércia Fortuna and all professors of MSc Finance for their dedication and availability to their students.

For all my friends, with a special thanks to Artur Dias and Tiago Loureiro for their friendship, concern and support; Dra. Irene Moreira Barros and her magnificent team for being always by my side during this last ten years. Without all of you this would have been harder.

My co-workers, for everything that they taught me; and to Dr. Helder Correia and Dr. Vitor Cardoso for all advices, guidance and example they both gave me during this last five years.

Finally, I would like to express my gratitude to Prof. Dr. Manuel Oliveira Marques that since my very first lesson of *Estudo de Empresas* in 2007 captivated me and all his students and passed his passion for corporate finance.

Abstract

The subprime crises in USA led to a general debt crisis in the European countries. This enabled some countries to refinance their government debt and so an intervention from European Financial Stabilization Mechanism (EFSM), European Central Bank (ECB) and International Monetary Fund (IMF) was needed.

In this dissertation we are focused in analyze how the European Debt crisis and Troika's intervention affected the capital structure of those assisted countries – Ireland, Greece and Portugal.

This study is based on accounting information of 31.775 companies existing in *Amadeus* database of Bureau Van Dijk for the period between 2005 and 2013.

The results showed that European Debt Crisis and Troika's intervention had impact on companies, however it was not uniformed in those three countries.

Key words: European Debt Crisis; Troika; Capital Structure; Trade Credit; Trade-off Theory; Pecking Order Theory

JEL-Codes: B26; C10; C12; G30; G32

"How do firms choose their capital structures?

We don't know."

Myers (1984)

Contents

Table of Figures

1. Introduction

The recent years have witnessed one of the worst financial crisis since Great Depression of 1930 (IMF, 2008) one that started in the USA and rapidly spread to Europe.

During this period, companies faced several restrictions on access to credit (Campello et al., 2010) which affected companies and financial markets. Some European countries that were unable to refinance their sovereign debt required the assistance of the *European Financial Stabilization Mechanism* (EFSM), the *European Central Bank* (ECB) and *International Monetary Fund* (IMF)[1].

The aim of this study is to understand how this financial crisis and Troika's assistance affected companies in Ireland, Greece and Portugal, specifically how their' financing decisions were impacted and how they adjusted their capital structure. In addition, it is attempted to assess the reaction of these companies in light of their country and size.

This financial crisis had a worldwide impact, and several researches were undertaken in order to understand its causes and its consequences, however researchers that studied its impact on companies' financing decisions are limited (Akbar et al., 2013). This serves as the main motivation to develop this dissertation.

The results show that the financial crisis and Troika's intervention had a significant impact on the companies' capital structure, noting that such impact was not homogenous, depending on the country and companies' size.

This dissertation is divided in four main parts. Firstly, it is presented a literature review about financial crisis and capital structure main theories, accompanied by a reference of similar studies. The second part focuses the data and methodology used in the study. It is followed by the applied statistical and econometric analysis, to be latter concluded with the main results and limitations of the study.

[1]Hereafter the set of these three entities will be designated as the commonly attributed name of Troika.

2. Literature Review

2.1. European Debt Crisis

The European debt crisis is a multi-year debt crisis that affected several states. Some of those states were unable to refinance their government debt or to rescue over-indebted banks under their national supervision without the assistance of *EFSF*, *ECB* or *IMF* (Bruyckere et al., 2013)

According Figures 1 and 2 impacts of crises could be perceived by the behavior of the Gross Domestic Product (GDP) growth rate or government behavior.

In average, the real GDP growth rate between 2003 and 2007 for EU was 2,5% (4,7% for Ireland, 4,4% for Greece and 1,2% for Portugal). After 2008, this situation worsens and in 2009, according Eurostat, the EU had a real GDP growth rate of -4,4%, -6,4 for Ireland, -4,4% for Greece and -3% for Portugal.

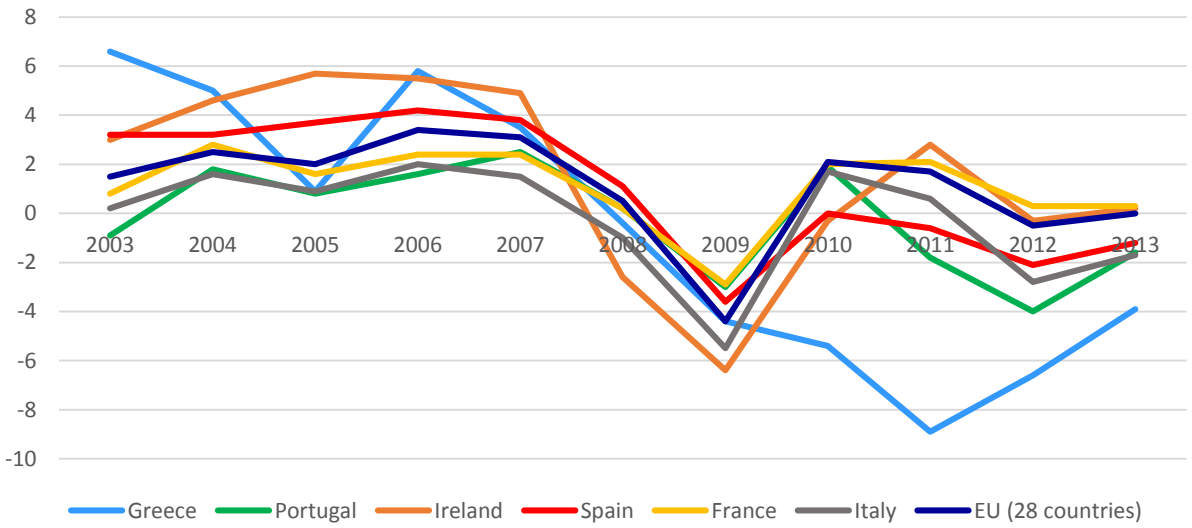


Figure 1 Real GDP growth rate[2]

[2] Own preparation; Source: Eurostat (2015b)

According to Figure 2, the expenditure of governments had consistently increased until 2009. In addition to the negative GDP growth rate, this led to an increase of the public deficit.

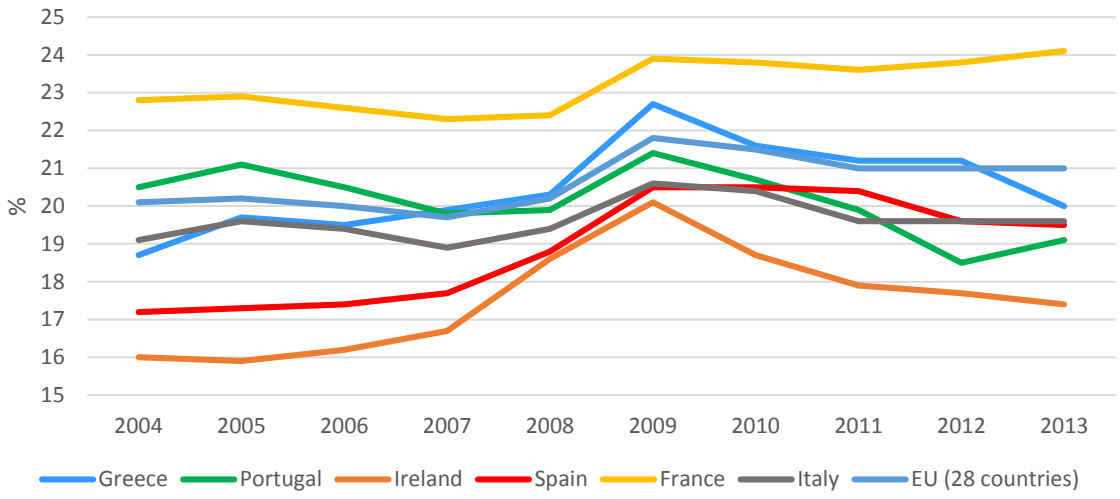


Figure 2 Final consumption expenditure of general government
(Percentage of GDP)[3]

The effects of the crisis, allied with the fact that Ireland, Greece and Portugal had already a highly external debt, led these countries ask for foreign support between 2010 and 2012.

2.2. Capital Structure Theories

Capital structure is the combination of equity and debt a company uses to finance its assets and it is one of the most studied and controversial topics in finance. The basis of this topic is the traditional approach, where it is defended the existence of an optimal capital structure. This topic gained significant relevance with Modigliani and Miller (1958), noting however that some strong assumptions considered in their research were later discarded allowing the rise of new theories, such as the trade-off theory and the pecking order theory.

[3] Own preparation; Source: Eurostat (2015a)

Durand (1952) was the first known author that used in a more strict and analytic way the capital structure topic, creating two new significant approaches within the field: the Net Income approach (NI) and Net Operating Income approach (NOI).

The NOI approach defends that the firm's value is not dependent on capital structure, or in other words, the value of the company is the same regardless of the proportion of bonds and stock. It assumes that cost of debt is constant and when a company increases its financial leverage it will increase its risk and shareholders will expect a higher return. This leads to an increase of cost of equity. Through this point of view, one can say that the value of a company depends on its operating income and business risk, but not from the proportion of debt and equity (Durand, 1952).

In contrast, the NI approach argues that companies' value increase with the proportion of debt in capital structure (Durand, 1952). In this method, it is assumed that cost of debt is lower than cost of equity. Thus, increasing the proportion of debt will decrease the overall cost of capital and resulting in an increase of the value of the company.

The traditional approach is somewhere between the previous two methods. It defends the existence of an optimal combination between equity and debt that minimize the capital cost and maximizes the value of the company. This optimal structure is specific to each company.

The article published by Modigliani and Miller (1958) "*The cost of capital, corporation finance and the theory of investment*" is a reference in capital structure studies and it is considered as a cornerstone article within the field.

According Modigliani and Miller (1958), and assuming that markets are efficient, capital structure is irrelevant for firm's value and cost of capital. The market value of a leverage firms is similar to the equivalent cost of capital of a non-leveraged firm added of a financial premium.

The method, however, is consider valid only through the use of strong assumptions, such as unlimited leverage, no frictions (no taxes, no agency costs, no transaction costs and no bankruptcy cost), and investors have homogenous expectations and information.

Such assumption is referred to as the *capital structure irrelevance principle*, which means that managers are not able to create or destroy value with its financing decisions since the cost of capital is similar to any leverage level (Modigliani & Miller, 1958).

Later on, Modigliani and Miller (1963) published a correction to the previous paper where they relaxed the assumption of no taxes. The authors introduced the tax benefit due to the payment of debt interest, which reduces the cost of capital and so increases firm value. With this reformulation, the capital structure became relevant for firm's value, reaching its maximum when the firm is only financed by debt.

Although its theoretical conclusions, it is considered in practice to be an extreme position that would raise some problems, such as bankruptcy costs (Altman, 1984), increasing of the cost of capital and reduction of the total value of the firm (Baxter, 1967).

In contrast to Modigliani and Miller (1958) that assumes a complete and perfect capital market, the trade-off theory accepts the fact that markets have some imperfections, such as taxes (Kraus & Litzenberger, 1973), bankruptcy costs (Baxter, 1967; Altman, 1984) and agency costs (Jensen & Meckling, 1976; Jensen, 1986).

The trade-off theory has for basis to choose the amount of equity and debt for a company taking into account its costs and benefits (Myers, 1984). In other words, the increase of debt may result in tax savings, but it also may cause increase of bankruptcy costs and agency costs.

Although, Miller (1977) maintains the opinion that even with a capital market with taxes the capital structure remains irrelevant due to investors personal tax that would compensate the firms tax benefit.

According Kraus and Litzenberger (1973) it is the choice of firm's financing mix that determines its debt obligations and, by consequence, its taxes savings. On the other hand, it is also the amount of debt of a firm that determines the states in which the firm will incur in bankruptcy penalties. The bankruptcy costs will affect negatively the net operating earnings and will cause some embarrassments with firm's stakeholders, along with affecting the integrity of the firm (Baxter, 1967). The company will ultimately incur in a cost of capital

increase. Thus, when bankruptcy costs exceed the tax benefits, the firm had reached its optimal capital structure (Altman, 1984).

Concerning agency costs Jensen and Meckling (1976) and Jensen (1986) defend that the optimal capital structure also depends on agency costs. The argument is that the issue of debt limits managers' behavior in order to guarantee futures obligations, decreasing the agency costs. Thus, the optimal capital structure will be the one that maximize firm's value and as the point where the marginal costs of debt will reimburse its marginal benefits.

The theory the pecking order theory, in contrast to the trade-off theory, was first developed by Myers (1984) and Myers and Majluf (1984). The authors analyzed the hierarchy of financing sources assuming that exist an asymmetry of information between managers and potential investors. It is assumed that managers have more information about the firm and firm value than potential investors.

According to Myers (1984) firms should prefer internal financing, through profits retained within the firm by shareholders. The dividend payout ratio is adapted according investment opportunities and thus dividend policy is conditioned by creation of cash-flows. If external financing is required, it should be issued firstly debt, then hybrid securities and lastly issuance of equity.

Since Modigliani and Miller's (1958) article, the capital structure has been one of the main topics studied in corporate finance. In spite of all studies undertaken and formulated theories, there is not a consensus about the optimal combination of equity and debt.

2.3. Impact on companies capital structure during crisis

The European crisis is a recent event, however previous studies were conducted in order to identify if a financial crisis had impact on the companies' capital structure.

Although this study is focused in the impact of European crisis in Irish, Greek and Portuguese companies, similar studies were already applied to other countries.

Voutsinas and Werner (2011) published a study regarding the impact of assets bubble in the 1980s and the credit crunch of the late 1990s in Japanese companies capital structure. These two authors concluded that leverage levels dropped after the assets bubble and during the credit crunch. This may indicate constraints on companies' structure. Another conclusion observed by the authors is that the companies' bank dependency relationship with leverage is reversed during the credit crunch. In other words, large companies that are less bank dependent have more credit facilities than small companies that are more bank dependent. Based in their results, they concluded that variations in credit supply and monetary conditions may have impact on the companies' capital structure.

Basing in the Korean economic crisis of 1997, Lim (2003) studied the dynamic patterns of credit allocation after the crisis according firms size. In this study the author concluded that large firms changed their financing source to capital markets in detriment of banks after crisis. In contrast, financial institutions also relocate their credit to small companies.

Concerning the financial crisis of 2007-2009, Akbar et al. (2013) focused their study in 4.973 private UK companies. They concluded that this financial crisis affected the total debt ratio of companies in particular the short term debt and trade credit. In this article, authors believe that the crisis had no significant impact on the long term financing.

In the next chapters, we will present the research developed for the three countries intervened by Troika during the European Debt Crisis of 2008.

3. Data and Methodology

This study intends to analyze the impact of financial crisis and Troika's intervention in the capital structure of Irish, Greek and Portuguese companies.

Firstly, an analysis of some financial ratios dividing by country and companies' dimension will be performed, in order to identify different patterns.

After that, we will present the model developed by Akbar et al. (2013) in order to explain the verified changes in capital structure in the three countries.

3.1. Data collection

Data was extracted from *Amadeus* of Bureau Van Dijk, where we select active private (not state-owned) companies from Ireland, Greece and Portugal from 2005 to 2013.

The study exclude assurance companies, guarantees, limited liability partnerships, public investment trusts and unlimited companies, companies that operate in financial sectors, public sector and regulated industries[4]. According the NACE Rev.2 codes, this implies that the sample should exclude companies classified as *64 - Financial service activities, except insurance and pension funding*, *65 - Insurance, reinsurance and pension funding, except compulsory social security*, *66 - Activities auxiliary to financial services and insurance activities* and *84 - Public administration and defense; compulsory social security*.

It was only considered companies with available data for the key variables of the study – short term debt, long term debt, account receivables, account payables, total assets and earnings before interest and tax (EBIT) and for all years considered in the study. Companies with negative equity were also not considered.

The final sample includes a total of 31.775companies, divided in 2.186 Irish, 8.334 Greek and 21.255 Portuguese companies.

The sample was divided in four groups according to the companies' dimension.

[4] As Akbar et al. (2013).

For that it was estimated the average total assets of each company during these 9 years and classified as[5]:

Lange companies – companies which average annual balance sheet is higher than 43 million euro;

Medium companies – companies which average annual balance sheet does not exceed 43 million euro;

Small companies – companies which average annual balance sheet does not exceed 10 million euro;

Micro companies – companies which average annual balance sheet does not exceed 2 million euro.

Below in Table 1 it is presented the descriptive statistics of the sample.

From the sample, 67% are Portuguese companies, 26% are Greek and 7% are Irish companies. The average asset is 12.492,73 thousand euro (35.937 thousand euro, 19.851,77 thousand euro and 7.196,12 thousand euro for Ireland, Greece and Portugal, respectively).

Concerning the dimension of all companies in the sample 3% are large companies and have an average asset of 306.492,87 thousand euro; 8% are medium-sized companies with an average asset of 19.453,61 thousand euro; 25% are small companies with an average asset of 4.446,13 thousand euro; and finally 64% are micro companies and have an average asset of 608,93 thousand euro.

[5] According the European Commission the definition of Micro, Small and Medium-sized companies follows three criteria – staff headcount, annual turnover and annual balance sheet. So, a **large companies** are defined as companies which employ more than 250 persons and whose annual turnover is higher than 50 million euro or annual balance sheet total higher than 43 million euro; **medium companies** are defined as companies which employ fewer than 250 persons and whose annual turnover does not exceed 50 million euro or annual balance sheet total does not exceed 43 million euro; **small companies** are defined as companies which employ fewer than 50 persons and whose annual turnover or annual balance sheet total does not exceed 10 million euro; **micro companies** are defined as companies which employ fewer than10 persons and whose annual turnover or annual balance sheet total does not exceed 2 million euro.
(http://ec.europa.eu/enterprise/policies/sme/files/sme_definition/sme_report_2009_en.pdf).
In order to simplify it was only considered in this study the value of annual balance sheet.

Thousand €		Grand Total	Large	MEDIUM	SMALL	MICRO
Ireland	Average	35.937,00	400.584,43	21.760,41	4.721,22	330,84
	Maximum	20.003.888,89	20.003.888,89	42.847,44	9.915,44	1.976,77
	Minimum	1,56	43.240,33	10.200,78	2.001,46	1,56
	Count	2.186	180	213	279	1.514
Greece	Average	19.851,77	335.839,63	19.090,14	4.453,58	1.039,82
	Maximum	14.823.845,78	14.823.845,78	42.989,86	9.998,74	1.998,96
	Minimum	47,45	43.151,55	10.007,75	2.000,15	47,45
	Count	8.334	372	1.124	3.499	3.339
Portugal	Average	7.196,12	240.800,71	19.387,37	4.421,18	543,09
	Maximum	9.102.428,55	9.102.428,55	42.846,29	9.981,13	1.999,16
	Minimum	10,86	43.019,09	10.009,33	2.000,84	10,86
	Count	21.255	424	1.250	4.122	15.459
Global	Average	12.492,73	306.492,87	19.453,61	4.446,13	608,93
	Maximum	20.003.888,89	20.003.888,89	42.989,86	9.998,74	1.999,16
	Minimum	1,56	43.019,09	10.007,75	2.000,15	1,56
	Count	31.775	976	2.587	7.900	20.312

Table 1 Descriptive statistics of the sample

Ireland and Portugal follow the same pattern concerning the dimension segmentation of companies (8% of Irish companies are classified as large, 10% as medium-sized, 13% as small and 69% as micro companies; in Portugal 2% are large companies, 6% medium-sized, 19% small and 73% micro companies).

In the case of Greece, small and micro companies has almost the same presence in the country (4,5% are large companies, 13,5% medium-sized, 42% small and 40% micro companies).

3.2.Hypothesis

The main aim of this study is to identify and interpret changes in companies' capital structure during Troika's intervention.

In order to identify those changes we subdivided our period of analysis in three parts:

1) Pre-crisis: 2005-2007

   This is the period of time where there are not evidences for financial markets disruptions, there are market liquidity and credit facility.

2) European Debt Crisis: 2008-2013

   This is a period of time characterized by high government debt levels, high interest rate spreads for government bonds, liquidity problems and limited credit access.

3) Troika's Intervention:

   i. Ireland: 2010-2013
   ii. Greece: 2010-2013
   iii. Portugal: 2011-2013

   This is the period in which this countries were assisted by *EFSF*, *ECB* and *IMF*. This period was characterized by the implementation of several contingency measures.

Four hypothesis were formulated:

H1: In periods of crisis (debt crisis and Troika's intervention) the financial leverage of companies decrease

During periods of crisis it is expected some credit restriction, which could led to a decrease of companies debt. With this hypothesis we intend to show if there were significant changes in the financing policies of companies. For that we are going to use the ratio Total Debt to Total Assets.

$$\text{Total Debt to Total Assets} = \frac{\text{Short Term Debt}_{it} + \text{Long Term Debt}_{it}}{\text{Total Assets}_{it}} \qquad (1)$$

H2: In periods of crisis the long term debt decrease

It is expected that in periods of crises, and due to some potential credit restrictions, companies refinance its debt with short term debt instead of long term.

With this hypothesis we are going to analyze if companies had restrictions to refinance their long term debt. It will be used the ratio Long Term Debt to Total Assets.

$$\text{Long Term Debt to Total Assets} = \frac{\text{Long Term Debt}_{it}}{\text{Total Assets}_{it}} \quad (2)$$

H3: In periods of crisis the current debt increase

With this hypothesis we intend to confirm if debt was refinanced by short term debt. It will be used the ratio Short Term Debt to Total Assets.

$$\text{Short Term Debt to Total Assets} = \frac{\text{Short Term Debt}_{it}}{\text{Total Assets}_{it}} \quad (3)$$

H4: In periods of crisis the trade credit increase

It is expected that during crisis periods companies extend payment terms to their suppliers, as well as implement more efficient collection policies in order to reduce the average time of receivables. We are going to analyze if companies substitute short term debt for trade credit.

It will be used the ratio Trade Credit to Total Assets.

$$\text{Trade Credit to Total Assets} = \frac{\text{Trade Credit}_{it}}{\text{Total Assets}_{it}} \quad (4)$$

Results analysis

In this Chapter start presenting the analysis of capital structure. This analysis is divided in two main parts – statistical and econometric analysis.

In the first part (section 4.1) an analysis to the dimension of companies will be done based on its total assets. Then it will be presented changes on capital structure, long term debt, short term debt and trade credit based on those ratios presented in the end of this Chapter.

In the second part (section 4.2) it will be presented the econometric analysis.

3.3.Statistical analysis

3.3.1. Total assets analysis

The total assets of our sample had some changes during this 9 years of study, as presented in Figure 3.

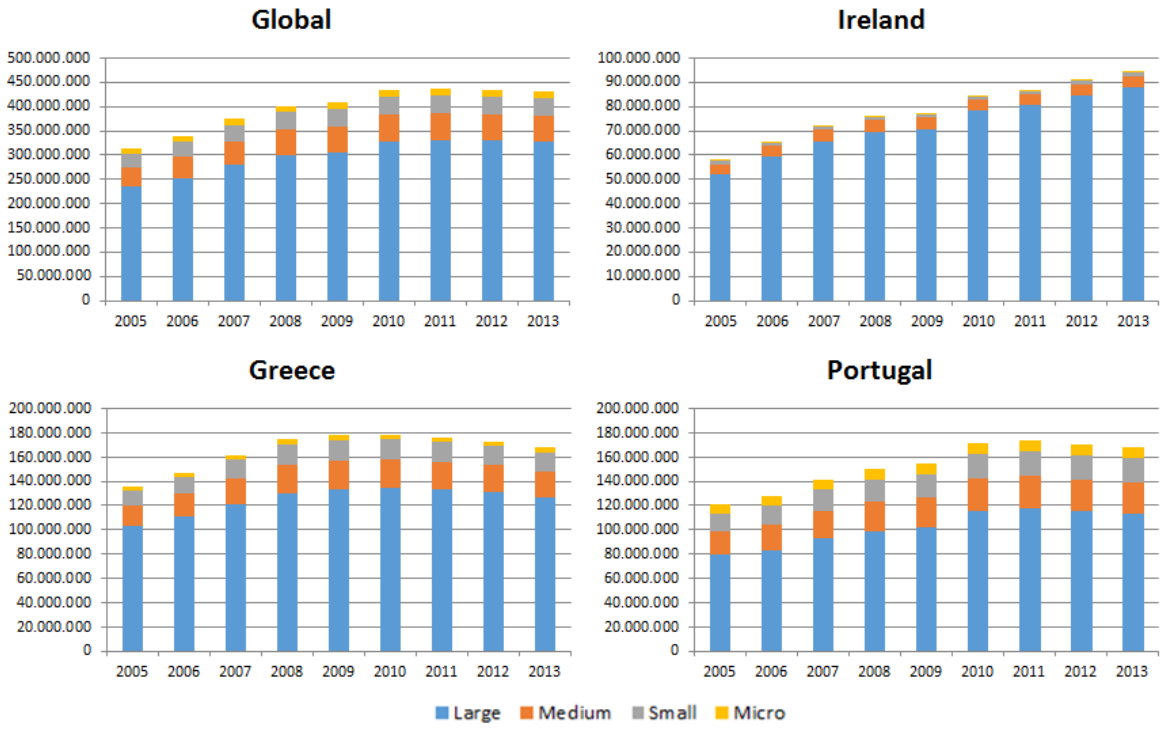


Figure 3 Sum of Total Assets (thousand euro)

In 2005 the 31.775 companies in study had a total asset of 314.186 million euro, reaching almost 434 billion euro in 2010 and in the end of the study they had a total of 430.079 million euro in assets.

In Table 2 it is presented the average assets by country and dimension of companies.

			2005	2006	2007	2008	2009	2010	2011	2012	2013
IRELAND	LARGE	thousand €	289 685	329 398	363 484	386 114	393 320	434 754	448 041	471 076	489 389
		growth rate		*13,7%*	*10,3%*	*6,2%*	*1,9%*	*10,5%*	*3,1%*	*5,1%*	*3,9%*
	MEDIUM	thousand €	19 572	21 712	23 657	23 486	21 674	21 699	21 283	21 100	21 660
		growth rate		*10,9%*	*9,0%*	*-0,7%*	*-7,7%*	*0,1%*	*-1,9%*	*-0,9%*	*2,7%*
	SMALL	thousand €	4 232	4 717	5 038	5 037	4 751	4 614	4 619	4 758	4 725
		growth rate		*11,5%*	*6,8%*	*0,0%*	*-5,7%*	*-2,9%*	*0,1%*	*3,0%*	*-0,7%*
	MICRO	thousand €	262	287	320	340	348	354	354	354	359
		growth rate		*9,5%*	*11,6%*	*6,4%*	*2,2%*	*1,8%*	*-0,1%*	*0,2%*	*1,4%*
	TOTAL	**thousand €**	**26 482**	**30 040**	**33 100**	**34 960**	**35 346**	**38 747**	**39 801**	**41 698**	**43 260**
		growth rate		***13,4%***	***10,2%***	***5,6%***	***1,1%***	***9,6%***	***2,7%***	***4,8%***	***3,7%***
GREECE	LARGE	thousand €	277 884	298 155	326 354	350 612	359 307	361 683	357 470	351 950	339 141
		growth rate		*7,3%*	*9,5%*	*7,4%*	*2,5%*	*0,7%*	*-1,2%*	*-1,5%*	*-3,6%*
	MEDIUM	thousand €	14 702	16 701	18 637	20 709	20 691	20 732	20 323	19 789	19 527
		growth rate		*13,6%*	*11,6%*	*11,1%*	*-0,1%*	*0,2%*	*-2,0%*	*-2,6%*	*-1,3%*
	SMALL	thousand €	3 589	3 950	4 372	4 843	4 850	4 761	4 628	4 550	4 540
		growth rate		*10,1%*	*10,7%*	*10,8%*	*0,2%*	*-1,8%*	*-2,8%*	*-1,7%*	*-0,2%*
	MICRO	thousand €	887	945	1 016	1 112	1 120	1 089	1 060	1 061	1 068
		growth rate		*6,6%*	*7,5%*	*9,4%*	*0,8%*	*-2,8%*	*-2,7%*	*0,2%*	*0,6%*
	TOTAL	**thousand €**	**16 249**	**17 598**	**19 324**	**20 922**	**21 314**	**21 375**	**21 065**	**20 714**	**20 105**
		growth rate		**8,3%**	**9,8%**	**8,3%**	**1,9%**	**0,3%**	**-1,5%**	**-1,7%**	**-2,9%**
PORTUGAL	LARGE	thousand €	186 862	196 277	218 859	233 784	240 874	273 127	278 410	272 850	266 164
		growth rate		*5,0%*	*11,5%*	*6,8%*	*3,0%*	*13,4%*	*1,9%*	*-2,0%*	*-2,5%*
	MEDIUM	thousand €	15 668	16 803	18 414	19 578	19 934	21 101	21 207	20 821	20 961
		growth rate		*7,2%*	*9,6%*	*6,3%*	*1,8%*	*5,9%*	*0,5%*	*-1,8%*	*0,7%*
	SMALL	thousand €	3 629	3 877	4 182	4 399	4 499	4 801	4 817	4 759	4 828
		growth rate		*6,8%*	*7,9%*	*5,2%*	*2,3%*	*6,7%*	*0,3%*	*-1,2%*	*1,4%*
	MICRO	thousand €	460	491	522	545	558	581	578	571	582
		growth rate		*6,8%*	*6,3%*	*4,4%*	*2,3%*	*4,2%*	*-0,5%*	*-1,3%*	*2,0%*
	TOTAL	**thousand €**	**5 687**	**6 013**	**6 639**	**7 064**	**7 255**	**8 043**	**8 156**	**8 005**	**7 902**
		growth rate		**5,7%**	**10,4%**	**6,4%**	**2,7%**	**10,9%**	**1,4%**	**-1,8%**	**-1,3%**

Table 2 Average asset evolution by country and companies' dimension

Ireland had a continuous growth, highlighting the period pre-crisis (2005-2007) and where there were a growth of 25% and in 2010 with 9,6%. When analyzing in detail, medium-size companies had a decrease in its average assets during the first two years of European Debt Crisis and almost all years of Troika's assistance. Small and micro companies have a similar behavior, however started recovering in 2012, earlier than medium-size companies.

Greek companies had a clear slowdown or even decrease since 2008. Large, medium and small companies maintained this decrease until 2013, however micro companies showed a slight growth in the two last year.

Concerning Portugal, only in the last three years of the study is showed a clear decrease or slowdown of average companies' assets.

In general, Ireland started its slowdown in 2008 while Greece and Portugal showed crisis impact only in the next year. During Troika's assistance, Ireland maintain a weak growth, excepting in the year of 2010 that has a growth rate of almost 10% due to the impact of large companies, however Greece and Portugal saw the average assets of their companies decrease.

3.3.2. Capital Structure analysis

Concerning capital structure it is important to note that, based in this sample, Greek and Portuguese companies are financed mainly by debt.

Country	2005	2006	2007	2008	2009	2010	2011	2012	2013
Ireland	39,7%	34,7%	30,9%	29,9%	28,7%	27,6%	27,7%	27,5%	27,6%
Greece	54,1%	55,0%	55,4%	54,0%	53,0%	52,0%	50,0%	47,5%	47,6%
Portugal	62,1%	60,8%	59,5%	57,9%	56,5%	55,4%	54,0%	53,3%	52,8%

Table 3 Evolution of debt on companies' capital structure by country

According Table 3 and 4 Ireland showed that its companies were financed around 33% by debt, until 2010. In that year, that correspond at the beginning of Troika's intervention, the percentage of debt decrease to 27,6% and in next years it maintains its level of debt.

It could be found that all categories had decrease its debt in capital structure during European Debt Crisis, which could be justified by some credit restrictions in financial markets due to some political measures. It was the small and micro companies that had been mostly affected. According our sample, the amount of debt of small Irish companies

was reduced in 16,2%, in average and 20,9% to micro companies. After 2010, with Troika's intervention, the reduction of debt continues.

	Dimension	Pre-Crisis	Debt Crisis	Troika	Δ
IRELAND	Large	51,9%	49,4%	48,9%	-5,9%
	Δ		-4,8%	-1,1%	
	Medium	50,3%	46,1%	44,6%	-11,5%
	Δ		-8,4%	-3,3%	
	Small	39,7%	33,3%	32,6%	-17,8%
	Δ		-16,2%	-2,0%	
	Micro	30,1%	23,8%	21,8%	-27,7%
	Δ		-20,9%	-8,5%	
	Total	35,1%	29,3%	27,6%	-21,3%
	Δ		-16,5%	-5,7%	
GREECE	Large	59,6%	60,5%	60,2%	1,0%
	Δ		1,5%	-0,5%	
	Medium	60,7%	60,7%	57,4%	-5,4%
	Δ		-0,1%	-5,3%	
	Small	56,0%	54,4%	49,7%	-11,3%
	Δ		-2,9%	-8,7%	
	Micro	51,0%	49,3%	44,9%	-11,9%
	Δ		-3,3%	-8,9%	
	Total	54,8%	53,5%	49,3%	-10,1%
	Δ		-2,4%	-7,8%	
PORTUGAL	Large	63,0%	63,2%	61,0%	-3,1%
	Δ		0,4%	-3,5%	
	Medium	61,3%	59,6%	56,6%	-7,6%
	Δ		-2,7%	-5,0%	
	Small	62,2%	59,4%	56,7%	-8,8%
	Δ		-4,5%	-4,5%	
	Micro	60,3%	55,4%	52,0%	-13,8%
	Δ		-8,1%	-6,1%	
	Total	60,8%	56,6%	53,4%	-12,2%
	Δ		-6,9%	-5,7%	

Table 4 Weight of Debt in capital structure by period, country and companies' dimension

Greek and Portuguese companies had also changed their financing policies. During the period of this analysis, Greek companies had reduced 10,1% of debt in their capital structure. Portuguese companies had also diminish the amount of debt in companies capital structure in 12,2%. Still, Portugal is the country that have more debt in capital structure of its companies.

In Greece, only medium, small and micro companies decrease the percentage of debt in its capital structure in Debt Crisis, however with Troika's assistance and the imposition of limits in bank's leverage, that affect the access to credit for companies, all categories were affected by it. Large companies were the last categories of companies affected by these crisis, and according to our sample the effect of these crisis in companies were greater with decreasing firms' dimension. This results corroborate the study of Voutsinas and Werner (2011), where they observed that large firms have higher debt ratios.

In relation to Portugal, it showed an identical behavior of Greece in the European Debt Crisis and Troika's intervention, however the slope between categories were less.

3.3.3. Long term debt

Analyzing the long term debts by total assets we pretend to study changes in financing policies of companies regarding the maturity of its debt.

According Table 5 and 6, Ireland decreased the use of long term debt in its companies financing in all period in analysis, however it was more critical in European Debt Crisis period.

Country	2005	2006	2007	2008	2009	2010	2011	2012	2013
Ireland	11,2%	8,4%	5,6%	5,7%	5,7%	5,4%	5,6%	5,7%	5,3%
Greece	7,0%	7,9%	9,1%	9,6%	10,8%	10,3%	9,9%	9,5%	9,4%
Portugal	10,2%	12,2%	11,7%	12,2%	13,0%	16,7%	17,2%	16,8%	16,7%

Table 5 Evolution of Long term debt/total assets by country

Analyzing by category, it was the small and micro companies that had the most significant change. Small companies decrease 30% of their long term debt during the Debt Crisis, comparing with the Pre-Crisis period; and micro companies had a reduction of 50,3% (during Pre-Crisis the amount of long term debt was almost 6,5% of the total assets and during the Debt Crisis it reduced to 3,2%). During Troika's intervention those companies maintained this tendency, however slower.

	Dimension	Pre-Crisis	Debt Crisis	Troika	Δ
IRELAND	Large	16,5%	16,3%	16,3%	-1,7%
	Δ		-1,6%	-0,1%	
	Medium	10,5%	10,8%	9,5%	-9,7%
	Δ		2,9%	-12,3%	
	Small	11,7%	8,2%	8,1%	-30,7%
	Δ		-30,0%	-1,0%	
	Micro	6,5%	3,2%	3,2%	-51,0%
	Δ		-50,3%	-1,5%	
	Total	8,4%	5,7%	5,5%	-34,4%
	Δ		-32,3%	-3,1%	
GREECE	Large	18,3%	21,0%	20,2%	10,0%
	Δ		14,5%	-4,0%	
	Medium	13,4%	17,3%	16,2%	20,8%
	Δ		28,7%	-6,1%	
	Small	8,3%	10,9%	10,5%	25,2%
	Δ		31,0%	-4,4%	
	Micro	4,6%	5,8%	5,7%	23,7%
	Δ		24,6%	-0,8%	
	Total	8,0%	10,2%	9,8%	22,3%
	Δ		27,3%	-3,9%	
PORTUGAL	Large	20,6%	23,8%	24,8%	20,7%
	Δ		15,5%	4,4%	
	Medium	15,0%	17,7%	17,2%	14,1%
	Δ		18,0%	-3,3%	
	Small	13,7%	16,1%	16,1%	18,0%
	Δ		18,0%	0,0%	
	Micro	10,2%	12,8%	16,9%	66,5%
	Δ		26,3%	31,8%	
	Total	11,3%	14,0%	16,9%	49,4%
	Δ		23,3%	21,1%	

Table 6 Long Term Debt by Total Assets by period, country and companies' dimension

In opposition Greece increased its financing by long term debt until 2010 (9,1% in 2007 and 10,3% in 2010) where it started decreasing, being in the end of the study 9,4%.

Greek companies in general increased the long term debt during Debt crisis, however it decreased during Troika's intervention.

In comparison with the other two countries, Portuguese companies had its assets financed with more percentage of long term debt. In 2005 the percentage of long term debt by total assets was 10,2% and it increased 6,5percentual points until 2013.

This increase was general for all categories, mainly for micro companies.

3.3.4. Short term debt

Analyzing the weight of short term debt of companies in Table 7 and 8, we realize that it is the largest component of the debt structure and in general it decrease during the years in analysis.

Irish companies in the same period decreased its long term and short term debt ratios, which means that companies had a higher weight in equity.

Small and micro Irish companies were the more affected with this financial crisis, especially during the European Debt Crisis.

Country	2005	2006	2007	2008	2009	2010	2011	2012	2013
Ireland	28,4%	26,4%	25,3%	24,2%	23,0%	22,2%	22,1%	21,8%	22,3%
Greece	47,1%	47,1%	46,3%	44,4%	42,2%	41,7%	40,2%	38,1%	38,1%
Portugal	51,9%	48,7%	47,8%	45,7%	43,5%	38,7%	36,8%	36,5%	36,0%

Table 7 Evolution of Short term debt/total assets by country

In the case of Greece it was observed a progressively decrease during this nine years in study. With exception of large companies, the remaining had a similar behavior to the European Debt Crisis and Troika's assistance period.

	Dimension	Pre-Crisis	Debt Crisis	Troika	Δ
IRELAND	Large	35,3%	33,1%	32,6%	*-7,8%*
	Δ		*-6,4%*	*-1,6%*	
	Medium	39,9%	35,3%	35,1%	*-12,0%*
	Δ		*-11,4%*	*-0,6%*	
	Small	27,9%	25,1%	24,5%	*-12,4%*
	Δ		*-10,3%*	*-2,3%*	
	Micro	23,6%	20,6%	18,6%	*-21,2%*
	Δ		*-12,8%*	*-9,6%*	
	Total	26,7%	23,6%	22,1%	*-17,2%*
	Δ		*-11,6%*	*-6,4%*	
GREECE	Large	41,2%	39,5%	40,0%	*-3,0%*
	Δ		*-4,3%*	*1,4%*	
	Medium	47,3%	43,4%	41,2%	*-12,9%*
	Δ		*-8,3%*	*-5,0%*	
	Small	47,6%	43,4%	39,2%	*-17,7%*
	Δ		*-8,8%*	*-9,7%*	
	Micro	46,4%	43,6%	39,2%	*-15,5%*
	Δ		*-6,1%*	*-10,0%*	
	Total	46,8%	43,3%	39,5%	*-15,6%*
	Δ		*-7,5%*	*-8,8%*	
PORTUGAL	Large	42,4%	39,4%	36,2%	*-14,7%*
	Δ		*-7,0%*	*-8,2%*	
	Medium	46,2%	41,9%	39,5%	*-14,6%*
	Δ		*-9,4%*	*-5,7%*	
	Small	48,5%	43,2%	40,5%	*-16,4%*
	Δ		*-10,8%*	*-6,2%*	
	Micro	50,2%	42,6%	35,1%	*-30,0%*
	Δ		*-15,1%*	*-17,6%*	
	Total	49,4%	42,6%	36,4%	*-26,3%*
	Δ		*-13,8%*	*-14,5%*	

Table 8 Short Term Debt by Total Assets by period, country and companies' dimension

Portugal was the country in analysis that registered the higher decrease comparing the beginning and the end of the study – a decrease of 15,9 percentage points. This occur following the policies of reduce banks leverage, and that according Gago (2013) from 2010 to 2012 the five Portuguese biggest banks had reduced its credit portfolio in 11,4%.

Micro companies were those that registered the higher negative growth rate of debt during this period of crisis, which is in accordance with Voutsinas and Werner (2011) study and it could be justified by credit restrictions for smaller companies.

3.3.5. Trade credit

Trade Credit represents the credit that companies give to each other for the purchase of goods and/or services.

In general, the trade credit increased with financial crisis, as Voutsinas and Werner (2011) said, trade credit is often used as an external finance substitute.

Country	2005	2006	2007	2008	2009	2010	2011	2012	2013
Ireland	4,4%	6,0%	7,5%	7,2%	7,5%	8,0%	8,1%	8,1%	7,5%
Greece	9,5%	10,5%	10,8%	11,7%	13,2%	13,0%	13,2%	13,3%	12,9%
Portugal	9,7%	9,9%	10,7%	12,5%	14,1%	17,3%	17,9%	18,2%	18,5%

Table 9 Evolution of Trade Credit/total assets by country

According Table 9 and 10 Portugal is the country with the higher weight of trade credit, representing almost 19% in 2013. It is important to note that in 2010 the trade credit increased 3,2 percentage points (from 14,1% in 2009 to 17,3% in 2010), the highest registered change. This is mainly due to micro companies, whose average weight of trade credit in total assets was 38,6% in pre-crisis and at the end of the study was two times more (17,9% in Troika's assistance period). However in all categories the weight of trade credit increased significantly.

In Ireland, large and small companies decrease the weight of trade credit during the period in analyses (31,8% for large companies and 25,8% for small companies), however micro companies had as increase of 62.3% during crisis period.

Similar to Portugal, Greek companies also increase its weight of trade credit during the European Debt Crisis. Nonetheless, during Troika's intervention only micro companies had

a significant increase; in addiction large and medium size companies diminish the weight of their trade credit.

This increase of trade credit could be understand as an answer of companies due to banks credit restrictions. Due to that scenario, companies could have done an effort for by one hand reduce its collections times, and by the other hand renegotiate the terms of payment with suppliers.

	Dimension	Pre-Crisis	Debt Crisis	Troika	Δ
IRELAND	Large	4,3%	4,4%	2,9%	*-31,8%*
	Δ		*3,1%*	*-33,9%*	
	Medium	7,7%	6,7%	7,9%	*1,9%*
	Δ		*-13,7%*	*18,1%*	
	Small	8,8%	7,0%	6,5%	*-25,8%*
	Δ		*-19,6%*	*-7,7%*	
	Micro	5,4%	7,8%	8,8%	*62,3%*
	Δ		*45,0%*	*12,0%*	
	Total	6,0%	7,3%	7,9%	*32,7%*
	Δ		*23,0%*	*7,8%*	
GREECE	Large	12,8%	13,3%	10,7%	*-16,4%*
	Δ		*4,4%*	*-19,9%*	
	Medium	14,8%	16,1%	15,0%	*1,3%*
	Δ		*8,6%*	*-6,7%*	
	Small	12,5%	14,9%	14,9%	*19,8%*
	Δ		*19,3%*	*0,5%*	
	Micro	6,1%	8,6%	10,8%	*76,7%*
	Δ		*41,5%*	*24,9%*	
	Total	10,2%	12,5%	13,1%	*27,8%*
	Δ		*21,7%*	*5,0%*	
PORTUGAL	Large	12,5%	13,3%	16,8%	*34,8%*
	Δ		*6,6%*	*26,4%*	
	Medium	15,5%	17,6%	20,0%	*29,1%*
	Δ		*13,4%*	*13,9%*	
	Small	13,7%	16,6%	19,0%	*38,7%*
	Δ		*20,7%*	*14,9%*	
	Micro	8,6%	13,9%	17,9%	*107,4%*
	Δ		*61,1%*	*28,7%*	
	Total	10,1%	14,6%	18,2%	*80,4%*
	Δ		*44,8%*	*24,6%*	

Table 10 Trade Credit by Total Assets by period, country and companies' dimension

3.4. Econometric analysis

In this section will be presented the econometric model used and the results of the analysis done. This model aims to test the hypothesis in study and tries to explain variations in the indicators previously presented.

3.4.1. Model

The model used in this section is based on the one developed by Akbar et al. (2013) where they study the effect of credit crisis on financing an investment decision for UK private companies.

These authors used a panel data based on a model of companies' fixed effects. This would reduce the problem of heterogeneity resulted from some correlations of dependent variables (Akbar et al., 2013).

The model used in this study is:

$$Y_{it} = \lambda_i + \Pi_1 crisis_{it} + \delta_1 \sum X_{it} + \delta_2 crisis_{it} \sum X_{it} + \Pi_2 crisis_{it} troika_{it} + \delta_3 crisis_{it} troika_{it} \sum X_{it} + \mu_{it} \quad (5)$$

Where, Y_{it} is the firm ratios mentioned above (1) – (4); λ_1 is the companies fixed effects; Π_1 and Π_2 are the differential slope coefficient, where the first shows how much is the slope coefficient of the European Debt Crisis (2008-2013) differs from the pre-crisis period (2005-2007), and the second indicates how much the slope coefficient with Troika's intervention differs from the already existent European Debt Crisis. The dummy variables are "crisis" and "troika", that are equal to "one" in the periods of crisis (2008-2013 to European Debt Crises and 2010-2013 to Troika's intervention in Ireland and Greece and 2011-2013 in Portugal) and "zero" otherwise. The interactive terms δ_2 and δ_3 represent changes in response to the pre-crisis period and Troika's intervention, respectively. X_{it} is the set of companies control variables.

The control variables chosen are the return on assets (ROA) and the natural logarithm of total assets as proxy of dimension and growth. One of the main objectives of this research is to identify the impact of these crisis in companies taking into account its dimensions. These control variables were chosen in order to identify in the model what is the impact of dimension in those debt indicators that are in study.

3.4.2. Results

Results are presented in Table 11, 12 and 13 for Ireland, Greece and Portugal, respectively.

The most important variables of this study are "crises" and "troika" and, according model (1) they are in accordance with Hypothesis 1. It suggests that in periods of credit restrictions it was a negative impact in the leverage ratio of companies, which corroborate with the statistical analyses done.

Analyzing results for Ireland (Table 1), whose dependent variable is the total debt ratio, it is shown that the variable of ROA before the European Debt Crisis period (ROA) is the coefficient with more impact in companies' capital structure and with a significance of 1% or better. These variables have a negative impact on companies' long term debt, which suggest that profitable companies use less debt. According pecking order theory, companies should prefer internal financing to external financing and so this theory could be applied to Irish companies.

The independent variable of growth during Troika's assistance (Ln_Assets*CR*TR) is positive as expected. This suggest that growing firms are more external financing dependents because they might not have internal funds available to finance their growth, which is in line with Akbar et al. (2013). With this results, it is suggested that during Troika's intervention the total debt increase 0,03€ for each 1% positive variation of total assets.

In the case of model (2) the coefficient of the dummy "crisis" is negative and statistical significant, confirming the hypothesis 2 that during crisis period the long term debt tends to decrease.

IRELAND				
	(1)	(2)	(3)	(4)
	Total Debt	Long Term Debt	Short Term Debt	Trade Credit
C	0,467	-0,032	0,500	0,081
	(0,047)***	(0,034)	(0,036)***	(0,034)**
ROA	-0,080	-0,022	-0,058	
	(0,011)***	(0,006)***	(0,010)***	
LN_ASSETS	-0,018	0,019	-0,037	-0,006
	(0,008)**	(0,005)***	(0,006)***	(0,005)
CR	-0,064	-0,034	-0,030	-0,002
	(0,010)***	(0,005)***	(0,009)***	(0,011)
ROA*CR	-0,023	0,012	-0,035	
	(0,017)	(0,006)**	(0,016)**	
LN_ASSETS*CR	0,001	0,000	0,001	0,000
	(0,001)	(0,001)	(0,001)	(0,001)
CR*TR	-0,037	0,000	-0,036	0,007
	(0,009)***	(0,004)	(0,009)***	(0,008)
ROA*CR*TR	0,024	-0,002	0,027	
	(0,021)	(0,004)	(0,018)	
LN_ASSETS*CR*TR	0,003	0,000	0,003	-0,001
	(0,001)**	(0,001)	(0,001)***	(0,001)
CF				0,000
				(0,000)
CF*CR				0,000
				(0,000)
CF*CR*TR				0,000
				(0,000)
N	2 186	2 186	2 186	1 642
R^2	0,735	0,658	0,762	0,739
Adjusted R^2	0,702	0,615	0,732	0,697
F-statistic	22	15	25	17
Prob (F-statistic)	0,000	0,000	0,000	0,000

Standard deviations are reported in parentheses; ***, ** and * represent 1%, 5% and 10% levels of significance respectively.

Table 11 Effect of financial crisis on leverage ratios – Ireland

In model (3) the dummy variables are negative (CR and CR*TR), indicating the negative impact that European Debt Crisis and Troika's intervention had in the short term debt of companies. These results do not corroborate the third hypothesis presented, which could suggest that Irish companies do not substituted their long term debt to short term debt.

Finally model (4) had no statistical significance in its main variables.

Analyzing Greek companies (Table 12) results for model (1) we can realize that our main variables are statistically significant. Our dummy variables "Crisis" and "Troika" are negative and suggest that have a negative impact on companies total debt, corroborating with our first hypothesis.

	GREECE			
	(1)	(2)	(3)	(4)
	Total Debt	Long Term Debt	Short Term Debt	Trade Credit
C	-0,253	-0,248	-0,005	0,079
	(0,040)***	(0,022)***	(0,036)	(0,031)**
ROA	0,085	-0,067	0,152	
	(0,028)***	(0,011)***	(0,025)***	
LN_ASSETS	0,101	0,042	0,059	0,003
	(0,005)***	(0,003)***	(0,005)***	(0,004)
CR	-0,052	-0,016	-0,036	0,054
	(0,008)***	(0,006)***	(0,009)***	(0,010)***
ROA*CR	-0,060	-0,009	-0,050	
	(0,018)***	(0,009)	(0,018)***	
LN_ASSETS*CR	0,003	0,004	-0,001	-0,004
	(0,001)***	(0,001)***	(0,001)	(0,001)***
CR*TR	-0,056	0,019	-0,075	0,080
	(0,009)***	(0,005)***	(0,009)***	(0,010)***
ROA*CR*TR	-0,287	-0,015	-0,272	
	(0,084)***	(0,025)	(0,061)***	
LN_ASSETS*CR*TR	0,003	-0,003	0,006	-0,001
	(0,001)***	(0,001)***	(0,001)***	(0,001)***
CF				0,000
				(0,000)*
CF*CR				0,000
				(0,000)
CF*CR*TR				0,000
				(0,000)***
N	8 334	8 334	8 334	83 265
R^2	0,855	0,768	0,832	0,738
Adjusted R^2	0,837	0,738	0,811	0,705
F-statistic	47	26	39	22
Prob (F-statistic)	0,000	0,000	0,000	0,000

Standard deviations are reported in parentheses; ***, ** and * represent 1%, 5% and 10% levels of significance respectively.

Table 12 Effect of financial crisis on leverage ratios – Greece

The Ln_Assets variable and its interactions with crisis and Troika period LN_ASSETS*CR and LN_ASSETS*CR*TR) are positive and might indicate that grow companies use less debt.According this results, the variable ROA and its interaction with European Debt Crisis and Troika's assistance suggest that profitability companies use less debt, especially during the second period.

In model (2) the variable ROA remains negative and statistical significant, which could indicate that profitable companies used less long term debt. This is consistent with the pecking order theory.

The dummy "crisis" is also negative, which is in line with our fourth hypothesis, however it indicates that Troika's assistance do not have impact on companies' long term debt structure.

In model (3) the ROA variable during crisis periods (ROA*CR and ROA*CR*TR) is negative and statistically significant, which suggest that during that period the short term debt tended to decrease, which is corroborated by the statistical analysis.

Finally model (4), as it was expected, financial crisis had a positive impact in trade credit (CR and CR*TR), which suggest that part of debt was substituted by trade credit.

According model (1) for Portugal, all variables are statistical significant and our main variables (CR and CR*TR) are negative, confirming that in periods of crisis Portuguese companies tend to reduce the amount of debt in its capital structures. The variables ROA in interaction with Troika are negative, as expected after our statistical analysis.

The coefficient of the interaction of Ln_Assets with crisis periods (LN_ASSETS, LN_ASSETS*CR and LN_ASSETS*CR*TR) have a positive sign which could mean that growing companies use less debt, especially during crisis periods.

PORTUGAL				
	(1)	(2)	(3)	(4)
	Total Debt	Long Term Debt	Short Term Debt	Trade Credit
C	0,058	-0,289	0,347	0,219
	(0,018)***	(0,014)***	(0,018)***	(0,018)***
ROA	-1,178	-0,011	-0,167	
	(0,012)***	(0,008)	(0,012)***	
LN_ASSETS	0,086	0,062	0,024	-0,018
	(0,003)***	(0,002)***	(0,003)***	(0,003)***
CR	-0,111	0,024	-0,134	0,106
	(0,004)***	(0,004)***	(0,004)***	(0,005)***
ROA*CR	-0,130	-0,099	-0,032	
	(0,019)***	(0,011)***	(0,016)*	
LN_ASSETS*CR	0,008	-0,001	0,009	-0,009
	(0,001)***	(0,0001)	(0,001)***	(0,001)***
CR*TR	-0,048	0,115	-0,162	0,055
	(0,004)***	(0,004)***	(0,005)***	(0,005)***
ROA*CR*TR	-0,146	-0,095	-0,051	
	(0,030)***	(0,015)***	(0,021)**	
LN_ASSETS*CR*TR	0,001	-0,013	0,014	-0,003
	(0,001)**	(0,001)***	(0,001)***	(0,001)***
CF				0,000
				(0,000)*
CF*CR				0,000
				(0,000)
CF*CR*TR				0,000
				(0,000)***
N	21 255	21 255	21 255	21 255
R^2	0,833	0,573	0,676	0,693
Adjusted R^2	0,812	0,519	0,635	0,655
F-statistic	40	11	17	18
Prob (F-statistic)	0,000	0,000	0,000	0,000

Standard deviations are reported in parentheses; ***, ** and * represent 1%, 5% and 10% levels of significance respectively.

Table 13 Effect of financial crisis on leverage ratios – Portugal

In model (2) during crisis periods the ROA variables (ROA*CR and ROA*CR*TR) have a negative sign, which corroborate with what was mentioned before, that profitability companies prefer internal financing to increase its debt.

The short term debt, according this econometric analysis, suggest that profitable Portuguese companies tend to decrease it. In opposite to our third hypothesis, our variables dummy are

negative, which could indicate that companies have difficulty to refinance in short term due to credit restrictions.

Finally model (4), as it was expected, financial crisis had a positive impact in trade credit, which suggest that part of debt was substituted by trade credit.

4. Conclusions, limitations and suggestions for future researches

This study aims to understand the impact that European Debt Crisis and Troika's assistance have in companies from Ireland, Greece and Portugal. To develop this research, a comparison was drawn out of the evolution of four different ratios – total debt to total assets, long term debt to total assets, short term debt to total assets and trade credit to total assets. This analysis considered periods that precede the crisis, the European Debt crisis itself and Troika's intervention to each country. Furthermore, the companies were divided by size – namely into large, medium, small and micro groups, – considering its average annual balance sheet. This intends to analyze if crisis effect was specific to companies' dimension.

From the statistical analyses, it was generally observed that the companies decreased the weight of debt in their capital structure during European Debt Crisis and Troika's assistance, which is in accordance with the first hypothesis formulated.

It was found significant differences regarding the debt maturity ratio on the companies' behavior, according its country and size. According our sample, Irish companies decrease the weight of long and short term debt in both crisis periods. The trade credit increased for micro companies, however large firms had a significant decrease during Troika's assistance.

In general, Greek and Portuguese companies increased their long term debt during the European Debt Crisis, however some long term debt decreased during Troika's assistance.

Our third hypothesis, was rejected. The short term debt ratio tended to decrease during both crisis periods. Both, Greek and Portuguese companies increased their trade credit ratios, with the exception of large and medium size Greek companies during Troika's assistance.

According to the performed econometric analyses, the total debt (model 1) showed the dummy variables *crisis* and *troika* were significant and indicate that the European Debt Crisis and Troika's assistance events had impact on the companies' debt.

The results of our models are considered significant, however some limitations to the study should be highlighted. First of all, our analyses were based in information from 2005 to 2013, however better conclusions should be taken if this period was extended, since Troika's assistance didn't conclude in 2013 and a post crisis analysis could be made. Another limitation is regarding the available data for this study, since it was detected a lack of financial information for Irish and Greek companies.

Considering future researches related to this topic, it is suggested the extension of the period of analysis in order to compare the preceding and posterior periods adjacent to the crisis. Another perspective about this research could be implementing the model developed by Akbar et al. (2013) and investigate the effect of the crisis on the performance and investment of companies.

5. References

Akbar, S., Rehman, S. u., & Ormrod, P. (2013). The Impact of recent financial shocks on the financing and investment policies of UK private firms. *International Review of Financial Analysis, 26*, 59-70.

Altman, E. I. (1984). A further empirical investigation of the bankruptcy cost question. *The Journal of Finance, 39 (4)*, 1067-1089.

Amadeus. (2015). Retrieved May, 2015, from Bureau Van Dijk

Baxter, N. D. (1967). Risk of ruin and the cost of capital. *The Journal of Finance, 22 (3)*, 395-403.

Bruyckere, V. D., Gerhardt, M., Schepens, G., & Vennet, R. V. (2013). Bank/sovereign risk spillovers in the European debt crisis. *Journal of Banking & Finance, 37*, 4793 - 4809.

Campello, M., Gimbona, E., Graham, J. R., & Harvey, C. R. (2010). Liquidity Management and Corporate Investment during a Financial Crisis. *National Bureau of Economic Research*.

Durand, D. (1952). Cost of debt and equity funds for business: trends and problems of measurement. *National Bureau of Economic Research*.

Eurostat. (2015a). Final consumption expenditure of general government. Retrieved May 24,2015 http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tec00010

Eurostat. (2015b). Real GDP growth rate - volume. Retrieved May 24, 2015 http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tec00115

Gago, M. J. (2013). *Meta de desalavancagem era obrigação, mas troika emendou mão há um ano.*

IMF. (2008). World Economic Outlook. *International Monetary Fund*.

Jensen, M. C. (1986). Agency costs of Free Cash Flow, Corporate Finance, and takeovers. *American Economic Review, 76 (2),* 323-329.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3,* 305-360.

Kraus, A., & Litzenberger, R. H. (1973). A state-preference model of optimal financial leverage. *The Journal of Finance, 28 (4),* 911-922.

Lim, Y. (2003). Sources of corporate financing and economic crisis in Korea: a micro-evidence. *National Bureau of Economic Research, Working Paper 9575*.

Miller, M. H. (1977). Debt and taxes. *The Journal of Finance, 32 (2),* 261-275.

Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *The American Economic Review, 48 (3),* 261-297.

Modigliani, F., & Miller, M. H. (1963). Corporate income taxes and the cost of capital: a correction. *The American Economic Review*, 433-443.

Myers, S. C. (1984). The Capital Structure Puzzle *The Journal of Finance, 39 (3),* 575-592.

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do no have. *Journal of Financial Economics, 13,* 187-221.

Voutsinas, K., & Werner, R. A. (2011). Credit supply and corporate capital structure: Evidence from Japan. *International Review of Financial Analysis, 20,* 320-334.